IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	**Frost**	)
		)
Serial No.:		)
		)
Filed:		)
		)
For:	**Modular Valve Assembly**	)

April 9, 2004

Mail Stop Patent Application
Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313-1450

Information Disclosure Statement

Sir:

As suggested by 37 C.F.R. § 1.97, applicant's undersigned attorney brings to the attention of the Patent and Trademark Office the references listed on the attached Form PTO/SB/08A, a copy of each of which is enclosed. This is not to be construed as a representation that a search has been made, or that no better prior art exists, or that a reference is relevant merely because cited.

Bimetal valves include valves such as U.S. Patent No. 4,508,314 and 4,671,484. These type valves typically rely on cantilevered bi-metal arm which moves a poppet from a valve seat upon initiation of a current about a coil on the arm. Bimetal valves typically have a low seating force when in a closed configuration.

Controlled valves such as U.S. Patent No. 6,220,854 and 6,116,230 have been utilized with pulse width modulated control signals and U. S. Patent No. 5,979,430 shows a supply device for a gas appliance manifold.

PCT Patent Application No. PCT/ITO1/00219 published as WO 02/090807 A1 shows a proportional valve with a shape memory alloy actuator. This valve appears to be relatively complicated in design and operation.

U.S. Patent No. 4,973,024 shows a valve driven by a shape memory alloy. This design requires a means responsive to the opening and closing movement of the valve element for the respective opening and closing of contacts to provide electricity through the shape memory alloy.

A number of patent applications have been filed by the Swagelok Company, including U.S. Patent No. 6,247,678, WO01/133306 A2, US 2001/0011414 A1 and US 2001/0038082 A1. These patents and/or applications rely on a coil of shape memory alloy wrapped around about a stationary and a moveable member, so when the coil contracts it moves the moveable member to unseat the valve. This appears to be an effective but rather cumbersome type arrangement.

U.S. Patent No. 5,865,418 utilizes a shape memory alloy for a valve actuator. This design provides for a normally open valve wherein upon energizing the shape memory alloy the valve can be closed.

International Publication No. WO02/090807 A1 shows a proportion valve with shape memory alloy actuator which utilizes a coiled shape memory alloy to unseat shutter **10** from a restricted area within the valve body.

U.S. Patent No. 5,211,371 shows a linearly actuated valve which utilizes a biasing spring as electric conductor.

U.S. Patent No. 6,279,869 and U.S. Patent No. 6,494,225 show a proportional flow control valve with moveable pinch jaws that can compress or open a flow tube to proportionally control the flow through a tube.

Shape memory alloys have also been utilized in a coil style such as is shown in U.S. Patent No. 6,557,827 and as a way to drive a cam member as shown in U.S. Patent No. 6,684,904.

A printout from Nanomuscle, Inc., shows the NM125 linear actuator.

Respectfully submitted,

MILLER & MARTIN

By: _____
Stephen J. Stark
Reg. No. 43,152
1000 Volunteer Building
832 Georgia Avenue
Chattanooga, Tennessee 37402-2289
(423) 756-6600

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	N/A
Filing Date	Herewith
First Named Inventor	Frost
Art Unit	
Examiner Name	
Attorney Docket Number	09401/0104

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US- 4,508,314 - A	04/02/1985	Hemme	
		US- 4,671,484 - A	06/09/1987	Bergquist et al.	
		US- 4,973,024 - A	11/27/1990	Homma	
		US- 5,211,371 - A	05/18/1993	Coffee	
		US- 5,865,418 - A	02/02/1999	Nakayama et al.	
		US- 5,979,430 - A	11/09/1999	Peed et al.	
		US- 6,116,230 - A	09/12/2000	Clifford et al.	
		US- 6,220,854 - A	04/24/2001	Clifford et al.	
		US- 6,247,678 - A	06/19/2001	Hines et al.	
		US- 6,279,869 - A	08/28/2001	Olewicz	
		US- 6,494,225 - A	12/17/2002	Olewicz et al.	
		US- 6,557,827 - A	05/06/2003	Aoki	
		US- 6,684,904 - A	02/03/2004	Ito	
		US- WO0133306 - A2	05/10/2001	Hill et al.	
		US- WO02090807 - A1	11/14/2002	Dario et al.	
		US- US200100114 A1	08/09/2001	Antonio et al.	
		US- US20010038082A1	11/08/2001	Hines et al.	
		US-			
		US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/08B (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 2

Complete if Known	
Application Number	N/A
Filing Date	Herewith
First Named Inventor	Frost
Art Unit	
Examiner Name	
Attorney Docket Number	09401-0104

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
		Printout from Nanomuscle, Inc., shows the NM125 linear actuator.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.